

“General Strock: Plenary Presentation on Risk Management”

Ladies and Gentlemen, Ministers and colleagues, I am honored to be here and to have this opportunity to discuss the U.S. Army Corps of Engineers' involvement with Hurricane Katrina and the response and recovery efforts. In keeping with the theme of this forum, “local actions for global change” I will also share some lessons learned from our recent experience in the region. What we learned locally may have relevance to you since most natural disasters are water related and almost half of all people live in areas vulnerable to floods and rising sea-levels.

Let me express my appreciation to the organizers of the World Water Forum for this year's program, President Fox , the Mexican Government, Mr Jaime Cristobal and CNA and the World Water Council. The Corps has and continues to eagerly support these efforts. These fora also deserve a great deal of credit for giving visibility to flood management and water related disasters. As you are well aware, since the last forum, many countries around the world have felt the devastating impacts from floods caused monsoons, typhoons and hurricanes.

On behalf of the American people, I want to thank all those who have helped and expressed their condolences especially our Mexican neighbors, and our German, Dutch, and Japanese friends. The experience of receiving help from outside the United States brought home to us that these disasters, and our efforts to prevent and respond to them, are truly part of a global community.

The Indian Ocean earthquake and tsunami and Hurricane Katrina were two of the most recent and largest disasters. They are powerful reminders that any nation, rich or poor, can be severely impacted by water related disasters.

Before I get to the subject at hand I would like to answer the question many of you might be asking, “Why is an Army officer involved in water resources issues?”

In the early days of our country the Army was the only source of trained engineers. Through an evolutionary process related to the growth of our nation, the U.S. Army Corps of Engineers developed into an agency that has responsibility for both military construction and integrated water resources management. Our water-related mission grew to encompass inland and deep draft navigation, shore protection and flood control, hydropower, aquatic ecosystem protection and restoration, water supply, recreation, and disaster response.

Our agency has 35,000 employees, mostly civilians, but we rely a great deal on the private industry to perform much of the on-the-ground work, such as the design and construction, while we provide policy, planning, contract management, and oversight.

Now to Hurricane Katrina – Hurricane Katrina first formed as a tropical storm off the coast of the Bahamas on August 23, 2005. Over the next seven days, it grew into a hurricane With winds between 115-130 miles per hour, and the accompanying storm surge that made landfall first in Florida and then along the Gulf Coast in Mississippi, Louisiana, and Alabama.

Nearly 93,000 square miles of our Nation was impacted, which is roughly an area the size of Great Britain. It was one of the most destructive natural disasters in American History. It killed more than 1,300 people and caused monumental destruction.

The city of New Orleans, a heavily populated urban area which is mostly located below sea level, was hit in two ways. First, from the impact of the hurricane. Second, from the subsequent flood caused by breaches in the 350-mile levee system. Over an estimated eighteen-hour period, approximately 80 percent of the city was flooded with six to twenty feet of water.

Although a majority of the New Orleans residents successfully evacuated, many people could not or did not leave the area. The result was one of the largest search and rescue operations in our Nation's history.

The Corps was involved in the response and recovery efforts on three levels.

We supported the Federal Emergency Management Agency under the United States National Response Plan. We assisted the Department of Defense in support of the military efforts in the area. We also had responsibilities related to our flood control and navigation missions.

In support of the Federal Emergency Management Agency, we provided ice, water, temporary power, temporary roofing and some temporary housing. Our largest mission was debris removal. We also assessed damages to public buildings and facilities such as water and sewage treatment plants and provided advice and assistance in bringing those systems back into operation. In all of these missions we were supported by

other Federal agencies, notably the Bureau of Reclamation from the Department of the Interior.

To give you an idea of the scope of work involved, we provided 103 million liters of water, 232 million pounds of ice and completed more than 197,000 temporary roofs, which allowed people to reoccupy their homes until permanent repairs could be made. We also provided almost 41,000 units of temporary housing.

We also began one of the largest debris removal missions in U.S. history, both in terms of cubic yards and area. To date, the Corps has removed 92 percent of the nearly 52 million cubic yards of material in Mississippi and Louisiana that we have been asked to remove.

Our support to the Department of Defense was in the form of personnel augmentation. Three of our general officers served as lead-engineers for the military task forces formed to assist the impacted states. They brought with them military and civilian staff members to help coordinate the activities of the Army, Air Force, Navy, and Marine engineers who responded to the disaster.

Finally, we had several responsibilities that are unique to the U.S. Army Corps of Engineers. Our nation's laws give us the authority to operate as an independent agency to maintain navigation in federal channels and to make emergency repairs during floods.

After the hurricane struck, the initial damages and unknowns shut down the entire region's port, harbor and waterway navigation system including the Gulf Intracoastal Waterway, which runs from Texas all the way to Florida. These important commercial arteries had to be opened up very quickly because it our nation's corn and grain harvest was underway and New Orleans is our largest agricultural port. Our extensive offshore oil and gas industry also relies on the navigation system.

We worked very closely with the National Oceanographic and Atmospheric Administration, the Navy, and the Coast Guard to survey ports and channels, clear obstructions, and replace aids to navigation. The teamwork was a great success story and underscores the importance of working together in the most difficult of times.

The initial work to repair the breaches was also a great team effort. Engineers from the Corps, air support from the Army, and private contractors joined hands to close the breaches and set the conditions for draining the city. In a remarkable 53 days, with assistance from Germany, the Netherlands, and Luxembourg, we made temporary repairs and pumped a total of 238 billion gallons from the area.

That same sense of teamwork is ongoing as we work to repair the levee system in New Orleans. An estimated 48 miles of the system sustained major damage, and another 121 sustained minor damage. By the beginning of the next hurricane season on June 1st the repairs will be complete and will provide area residents with the same, and in some areas, more protection they had prior to when Hurricane Katrina struck.

At the same time as we repair the hurricane protection system, we are investigating why the breaches occurred. We convened an international Independent Performance Evaluation Team with government, academia, and the private sector, who are working together to investigate the causes and make recommendations for enhancements as we rebuild and improve the system.

As we continue to repair the hurricane protection system and investigate what happened, we are also looking ahead as a nation to make changes in our ability to respond to any man made or natural disaster.

President Bush ordered a comprehensive review of the federal response to Hurricane Katrina. He concluded that as a nation, we must “institutionalize a comprehensive National Preparedness System and concurrently foster a new, robust culture of preparedness. “

So, from this catastrophe, we as a nation have the opportunity to improve. The lessons we learned may help others in preparing to respond to disasters. So now, let me share with you what worked and what did not work well in our hurricane preparations and response.

First and foremost the teamwork and sense of partnership among many different organizations was a success. Our strong partnership with the navigation industry greatly facilitated the re-opening of major ports. The same is true of established relationships with local levee districts and boards, which helped us coordinate our actions effectively. These relationships must be developed before disaster strikes.

The Corps of Engineers' organizational structure and planning process also worked well. We have offices located around the world. This local presence is helpful in responding rapidly to any number of emergencies. We have groups of employees from around the country who are trained and ready before the disaster strikes to respond to a certain mission, such as providing temporary roofing.

Related to that, our roles and responsibilities as they relate to the Federal Emergency Management Agency were clearly understood in advance, in particular, how the contracting and financial elements would work. Understanding who has what responsibility made it easier to operate during the immediate aftermath of the disaster. Before Hurricane Katrina struck, we prepared for our missions by establishing contracts with private industry ahead of time, to provide ice, water, temporary power, and other services.

Additionally, our plans to augment offices that are impacted by disaster also worked well. Our office in New Orleans could not operate after the hurricane so hundreds of employees from our office in Memphis, Tennessee took over the emergency functions for their area and we brought in teams from around the country to support that effort. For example, our office in St. Louis has responsibility for rebuilding the levee system.

Now, let me turn to what did not work well. First, across federal, state and local governments, our communication systems were ineffective. We did not have enough reliable, redundant, capable systems and personnel to allow proper communication among the various levels of government. This made it very difficult to identify needs and assess effectiveness of response efforts.

Second, state Commodity Distribution Plans were not synchronized with the Federal commodity support mission. The result was that trucks trying to deliver relief supplies received unclear and conflicting information so in some cases goods were not sent where they were needed. It is also important to pre-position items such as sandbags, generators, plastic screens ahead of time, to the extent possible.

Third, we learned that there should be a national levee database to provide information about threats and risk assessment of our levees. Digital or Geographic Information System data would be a good start. What is needed is information that shows where the risks are so that we can understand where people should and should not go in an evacuation.

Fourth, we must have the capability to rapidly assess damage to critical infrastructure. This is essential to facilitate effective early response. The challenge in New Orleans is that we knew that the hurricane protection system would not protect against a Category 4 or Category 5 hurricane. In order to reduce the risk to people, there was an order to evacuate. The problem is we also needed people on the levees looking for weak spots and to respond immediately. So the challenge is in the future, to make sure that we have pre-positioned response teams available outside the impact area that can go in when the hurricanes passes through.

A final lesson learned, or question we must ask is, what is the proper level of protection for our nation's cities? This is an issue that is not unique to New Orleans. There is no U.S. national policy on the issue.

The Corps of Engineers' role in such matters is to provide a recommendation on a proposal. We look at the general engineering feasibility, the economic justification and the potential environmental implications. As the chief engineer, I answer those questions, and then present them to the decision-makers.

We evaluate projects by comparing the cost to the benefits that would occur by building the project. We also consider impacts on the environment. We have learned that it is important to look basin-wide, because sometimes we accelerate risk by changing the environment.

For example, the work we did on the Mississippi River contributed to the loss of wetlands. That loss increased the vulnerability of southeast Louisiana residents to such a storm such as Katrina.

That example highlights the importance of developing comprehensive and integrated plans. Integrated water resources management is an effective way to meet multiple water related needs. And linking flood management and other water uses, to water supply needs, can help achieve the goal outlined in the U.N. Millennium Declaration... to reduce by half the number of people who are unable to reach or afford safe drinking water by the year 2015.

This experience also suggests important lessons for the world beyond New Orleans and the Gulf.. Disasters and relief are now globalized phenomena and we need to rethink how we cooperate in risk assessment, early warning, prevention, and response.

We must also recognize that we are not dealing with static systems and that risk changes over time as climate, land and water forms, and patterns of development change.

We must devise non-structural and behavioral measures whenever possible but these alone are not enough to reduce risk of disasters. We will sometimes need structures – and we must always consider impacts on the environment in our integrated solutions. Our Structures are critical but also can be dangerous. Ecosystem vitality must be integrated into the solutions.

On the theme of today, we need to rethink, how to determine what risk will be acceptable to what population and who will pay. We must view the integration of relief, response and prevention as a holistic risk management - in which the citizens actively participate in choosing levels of acceptable risk. Finally, I think we all need to learn how to better communicate risk to populations we serve

Let me conclude by saying that our nation will be making changes to how we respond to disasters. This will include taking part in exercises with an emphasis on earthquake and hurricane planning to test our national capabilities. We look forward to working with other countries so that we can share information and learn from each other in our shared goal of providing the best protection and assistance to our residents.

Thank you for the honor of addressing you today. I leave you with our 200-year old motto, inspired by the French. It means let us try... Essayons!

